

Hydro Review Boards

An important component for a
successful development.

By

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Review Boards – introduction.

- Most large utilities now use review boards, and have been doing so for many years.
- Smaller utilities, most project developers and owners unclear on Board use.
- Paper concentrates on why, when and how to use Review Boards.²²

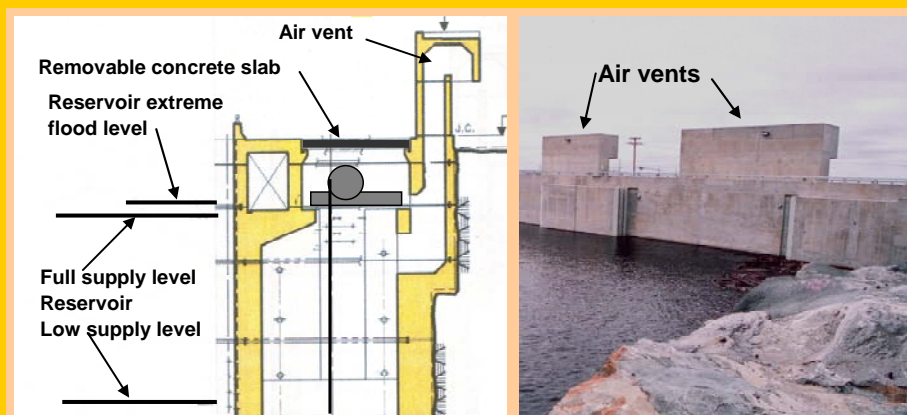
Review Boards – necessary???

- Provide added assurance that layout and design is optimized.
- Can question and comment on concepts.
- May reduce costs by eliminating excessive conservative designs.
- Can enhance knowledge of project team with informal lectures.

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Questionable concept - intake hoist below deck – subjected to occasional flooding.



Review Boards – meeting times

- The sooner – the better.
- First meeting - optimum time is after completion of pre-feasibility report and decision made to proceed further.
- Regular semi-annual meetings thereafter.

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Review Boards – board experience.

- Depends on project structures.
- Number of members – 3 to 5.
- Member experience –
 - 1 geotechnical rock mechanics engineer.
 - 1 geotechnical soil mechanics engineer.
 - 1 civil structures/hydraulics engineer.
 - 1 general mechanical engineer.Note no cost or electrical engineers.

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Review Boards – board liabilities.

- Most board members - retired individuals.
- Cannot obtain any liability insurance.
- Project owner should absolve Board from any project liability.

Liability is major stumbling block for recruiting Board members.

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Review Boards – terms of reference.

- Terms are an essential requirement.
- Some project data could be eliminated from review such as the FSL and TWL.
- Review such factors as –
 - Project concept.
 - Suitability of design and standard compliance.
 - Construction methodology and schedule.
 - Provide detailed report **prior** to departure.

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Review Boards – meeting organization.

- Sunday – travel to Owners office site.
- Monday – meeting at office with consultant - discuss design and construction progress.
- Tuesday – travel to site and inspection of site.
- Wednesday – site presentations and return to office.
- Thursday – report preparation by Board.
- Friday – presentation of report and travel home.

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Review Boards – site inspections.

- Preview with presentations on progress.
- Outline site inspection route.
- Provide guide and safety inspector.
- Avoid long walks, rough terrain and steep slopes.
- Include all site senior engineers to answer any questions.
- Provide opportunity(?) for a Board member to present an informal paper or discussion.

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Site inspection – safety.



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Review Boards – report format.

- 1 – Covering letter.
- 2 – Introduction to discuss progress.
- 3 – Discussion on each point of interest.
- 4 – Conclusions and recommendations.
- 5 – Appendices –
 - Detailed itinerary (a).
 - List of attendees at each meeting (a).
 - Any calculations, drawings or photos.

(a) By Owner's liaison engineer.

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Review Boards – transfer of knowledge.

- Take opportunity to improve skills of owner and consultant staff.
- Ask Board member(s) to present informal paper or lecture on their specialty.
- Provide this opportunity at both site and home office.

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Review Boards for smaller projects.

- Boards considered to be very expensive.
- Smaller projects usually by smaller consultants.
- Smaller consultants – limited experience.
- Many design issues with smaller projects – mostly due to limited budgets.
- Smaller Review Boards can be used with effect on smaller projects.

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Small hydro – some common mistakes

- Tunnel rock traps with no access.
- Too widely spaced trashracks.
- Inflated turbine efficiency and performance
- Incorrect selection of turbine type.
- Poor silt exclusion facilities.
- Inadequate maintenance facilities.
- Insufficient intake submergence.

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Review Boards (RB) – conclusions

- RB's add safety, security and assurance.
- Optimum time for starting RB work is after pre-feasibility report and decision made to proceed.
- For large projects RB +/- 5 members.
- For small projects RB +/- 2 members.
- RB's provide an opportunity for transfer of knowledge and experience.

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End of presentation

Thanks for your attention

Any Questions?

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